

## 3.2 TRAFFIC AND CIRCULATION

### 3.2.1 Site Circulation and Access

The project site has one primary access and a perimeter circulation road that begins at an intersection with Highway 128 and forms a loop within the site (see Figures 1-2 and 1-3). The intersection is controlled via a stop sign for vehicles exiting the project site. A deceleration lane exists for eastbound motorists on Highway 128. A left turn lane for entry into the site exists for westbound motorists on Highway 128 turning into the site. The site access road is paved from Highway 128 to the Hybrid Power Test Building. The remainder of the perimeter road and other site access routes shown in Figure 1-3 have gravel surfaces.

Highway 93 is located west of the site. Highway 93 and 128 intersect northwest of the site. A stop sign controls access to Highway 93 from Highway 128.

The NWTC granted a road easement across the site to aggregate operators to the south and west (see Figure 1-3). There is no short-term or long-term plan or schedule in place for construction of a road using this easement (see related discussions in Sections 1.2.2 and 3.1.1).

### 3.2.2 Traffic Volumes

Traffic volumes on roads within the project site are very low and well within current design capacities. Volumes on Highway 128 in the project vicinity are also low relative to the current design capacity even at typical peak hours. Volumes on Highway 93 are higher and can exceed design capacity during A.M. and P.M. peak hours. The Level of Service (LOS), a ratio of traffic volume to design capacity rated with the letters A-F (see Table 3-1), can reach Level F at the Highway 93/Highway 128 intersection during the A.M. and P.M. peak hours, resulting in considerable delays for both left turn movements. The LOS at the project entry road is rated A at all times due to relatively low volumes and delays at this intersection.

**Table 3-1 Level of Service as a Function of Volume to Capacity Ratios**

Level of Service	Range of Actual Volume / Design Capacity Ratios
A	0 – 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.01

Source: Transportation Research Board,  
2000 Highway Capacity Manual

### 3.2.3 Accidents

The Colorado Department of Transportation (CDOT) was contacted to determine accident history along Highway 128 and Highway 93. In summary, there were 139 reported accidents along the portion of Highway 93 in the vicinity of the Highway 93/128 intersection over a 10-year

period (January 1, 1990 to December 31, 1999). An additional 86 accidents were reported along Highway 128 between Highway 93 and milepost 6.00 (6 miles east) during a five-year period (January 1, 1995 and December 31, 2001). Three people were killed in three separate accidents along Highway 93. A total of 96 people were injured in 58 injury accidents along Highway 93. Three people were killed along Highway 128. A total of 63 people were injured in 46 injury accidents along Highway 128. There were two recorded injury accidents within two tenths of a mile of the site access road/Highway 128 intersection. Neither one of these accidents occurred in the immediate vicinity of the site access road intersection (Ellison, 2001).

### **3.2.4 Future Road Improvements**

CDOT, the Regional Transit District (RTD), and local governments are addressing substantial road and transit improvement needs in the vicinity of the NWTC. The major improvements are those associated with U.S. 36 and the Northwest Parkway projects. Improvements to U.S. 36 are expected to involve 4 lanes in each direction and improved bus and commuter rail service in the corridor between Denver and Boulder. The Northwest Parkway toll road will begin east of U.S. 36 and connect to Interstate 25 at 158<sup>th</sup>/E-470, providing an alternative east-west highway link to U.S. 36 and Interstate 70. Current plans call for an arterial roadway (no toll) that will connect to the Northwest Parkway and then pass over U.S. 36 without interchange connections. The arterial segment will intersect Highway 128 at the Northwest corner of the Jefferson County Airport east of the project site. Construction of the Northwest Parkway began July 19, 2001. These road improvements and surrounding land development are expected to add a considerable amount of traffic to Highway 128 while addressing transportation needs for new and anticipated development (Oglesby, 2001).

The most recent and relevant transportation planning study is the Northwest Quadrant Feasibility Study. The Final Report is dated January 31, 2001. This study was commissioned by Jefferson County with the Cities of Arvada, Golden, Lakewood, Westminster and Wheat Ridge with the goal to increase mobility, improve safety, and provide a higher level of service for transportation facilities over the next 20 years.

The City of Boulder and Boulder County were not noted as participants. The scope of the Study was to develop a set of transportation improvements that meet the project goal and facilitate adoption of the improvements. Highway 128 was the study's northern border. The western border was one mile west of Highway 93.

The Northwest Quadrant Feasibility Study proposes the following long-term improvements in the project vicinity:

- Widen Highway 128 to four lanes, two in each direction;
- Widen Highway 93 to four lanes, two in each direction; and
- Construct an interchange at the Highway 128/93 intersection.

Given high levels of demand for state and federal road construction funds, limited local funds and competitive processes for individual projects to be placed into the State's Transportation Improvement Plan (TIP) and the Regional Transportation Plan (RTP), it would be unlikely that these improvements would be constructed in the next five years, and highly likely that they would not be constructed within the next 10 or 15 years (Oglesby and Ellison, 2001).

No major interim improvements are identified for either highway or for the Highway 128/93 intersection. However, some widening of shoulders and bridges along Highway 93 has been done and may be done in the future to improve safety, especially for bicycles.

There are ongoing discussions involving an alternative north/south route on or between Highway 93 and Indiana Street. The purpose of this route is to create a link between the Northwest Parkway and West C470. The NWTC is within the alignment study area, but alignments that would use NWTC lands and other lands associated with RFETS would be somewhat indirect and would face considerable public, technical, cost and environmental obstacles. At this time, this project could be considered more speculative than foreseeable, but circumstances could change over the next few years that narrow the possible alignment corridor and make this project more foreseeable.

### **3.3 AIR QUALITY**

To address minor incremental impacts from NREL operations, NREL implements an Air Quality Protection Program under NREL Policy 6-2.5. The purpose of the program is "to prevent the degradation of local air quality while helping to preserve the quality of the local and regional airshed to the maximum extent possible." The program applies to stationary sources, not to mobile sources such as vehicles. NWTC project managers notify the NREL ES&H Office prior to the beginning of any project that poses the potential for air emissions. The ES&H Office evaluates air emissions and permitting requirements early in a project's planning phase. The ES&H Office is notified of every new piece of fuel-burning equipment and changes in the status of existing equipment. The ES&H Office contacts the Colorado Department of Public Health and Environment (CDPHE) when necessary. The NWTC operates its emissions sources in compliance with all applicable State regulations. State permits are not currently required.

#### **3.3.1 Climate**

The NWTC location is characterized by a semiarid climate that exhibits large seasonal and short-term temperature variations typically associated with movement of large continental air masses. The central Rocky Mountains are usually dominated by high pressure and the plains by low pressure. High pressure frequently governs the weather along the Front Range, resulting in fair, dry conditions at the NWTC. Although the average daily temperatures at the NWTC are moderate, large diurnal temperature variations result from the site's 6,000-foot elevation and thinner atmosphere. Average daily winter temperatures range from 20 to 45°F. Average daily summer temperatures range from 55 to 85°F. Temperatures are generally above freezing from about mid-May through mid-September. The NWTC receives approximately 15 inches of precipitation per year. Seventy percent of the precipitation occurs in April through September. The average seasonal snowfall is approximately 65 inches. There are occasional periods of severe drought along the Front Range. Average mid-afternoon humidity is approximately 40%.

Pacific Northwest National Laboratory's Wind Energy Resource Atlas of the United States locates the NWTC in an area that typically exhibits Class 4 to 6 average wind power. Areas described as Class 3 or above are those that are potentially suitable for wind energy applications (NREL web site, 2001). Average wind speeds are approximately 9 miles per hour (mph) at the NWTC. About 35% of wind velocities range from 5.6 to 9 mph. About 34% of the